



## Book Review AMJ 2013, 6, 1

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### Sentinel Chicken

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The first few chapters of this book set the scene. Interactions between the natural world, birds and humans are commonplace. Throughout history, birds have been used as 'early warning signs' of potential danger to humans. The author explains why the efficiency of their respiratory systems make them an 'effective atmospheric sampling machine'.

Chapter 4 details what a sentinel chicken is and why it is the namesake of this book. I will not spoil the surprise – you need to read the detailed explanation of the history of sentinel chickens and their relationship to human health yourself – it is fascinating. The chapter discusses alpha viruses and flaviviruses, and the quest to find appropriate animal hosts to study the various transmission cycles of viruses from animals to humans (zoonoses). Although mosquitoes are often the vector of transmission, migrating birds infected by this vector are thought to be responsible for spreading disease to humans across the globe. Chapter 4 finishes with a warning about a possible danger to Australia from the current trend of increased ambient temperatures worldwide. For example, if the temperature in Australia increases, infections such as malaria may emerge due to the migration of mosquitoes south.

Chapter 5 explains the current trend of specialised rather than generalist scientists. The author used a personal example demonstrating this phenomenon. He goes on to say that this book focuses on the interface between birds, humans, disease and environmental degradation. However the sheer size of literature now available around these topics makes it almost impossible to maintain currency in all of these areas. In an effort to summarise the evidence, the author collaborated with people who had experience in zoology and ornithology to compliment his own qualifications and areas of expertise. He uses the outbreaks of West Nile Virus (WNV) to illustrate his point. WNV is another virus that has a mosquito, bird, human interconnection, in this case being predominantly mosquitoes, crow, humans.

Chapter 6 describes the impact of virus transmission from ticks to animals and uses the example of a possible catastrophic economic cost from the transfer of tick-borne viruses to sheep (Clouping-ill virus) and grouse in Scotland.

Sections of the Scottish moors are highly infested with ticks. They live predominantly on sheep and then attach to the grouse or are picked up off the ground by the grouse when they feed. Evidences shows that a solution to this real life problem must be found as soon as possible before the economic and social climate of the Scottish highlands are irrevocably damaged.

Birds, influenza and fresh water are all major players in the maintenance of influenza A infections in humans (Chapters 7). The birds involved range from aquatic birds and wild geese through to domestic chickens. The origins of H5N1 – induced disease avian influenza (bird flu) are discussed as is the devastating economic consequences of the mass slaughter of domestic poultry in developing countries in an effort to eradicate this virulent disease.

Viruses are endemic throughout the world thus will never be eliminated. Chapter 8 discusses the widespread, low grade infection present in bird populations throughout the world, describes some of the major zoonotic outbreaks and how various governments dealt with them. Doherty argues that although more sophisticated surveillance tools are helping to isolate the origins of major outbreaks, they are not impacting on the number of outbreaks that are occurring. He provides some reasons why this is so.

Chapter 9 chronicles the contribution of virology and microbiology to avian influenza and the journey towards an effective treatment. Woven though this chapter are the contribution that Graeme Lavert and Rob Webster have made in this area of research. Their stories are examples of why this book is so readable. Doherty brings history to life with real people, warts and all. They leave you wishing you had the opportunity to share in their adventures.

Chapter 10 switches the focuses to bugs and the discovery of vaccines for bacterial infections in birds. Pasteur's work with microorganisms is summarised as is Theobald Smith's study of enteric infections such as salmonella and mosquito borne infections.

Chapter 11 introduces the similarities between the pathology of bird and human malaria using the plight of



the Hawaiian wild birds as an example of how malaria can almost wipe out a species in a very short time. The author states that if the climate changes by as little as two degrees in the usually mosquito-free high altitude areas of Hawaii, entire species of birds could disappear very quickly as mosquitoes inhabit these areas.

Cancer, genetics, government initiatives, lead poisoning and global warming are all touched on in subsequent chapters. Doherty concluded the book with a warning about the changes humans are making to the environment and how this is changing the balance of our natural environment. He notes that birds are an indicator of change – the sentinels whose behaviours act as a litmus test of what is happening around us. He concludes by stating that monitoring the behaviour and health of avian species should be fundamental to the maintenance of human health and our environment.

An interesting, informative book that I enjoyed immensely.

#### About the book

Doherty, P Sentinel chicken. Melbourne University Press  
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### DR-TB drugs under the microscope

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Tuberculosis (TB) continues to be a major public health problem killing over 1.4 million people worldwide every year. TB is associated in a diabolical partnership with HIV/AIDS and is the major killer of persons living with HIV. Due to a number of reasons ranging from decreased political commitment to non-compliance with treatment, resistance of *Mycobacterium tuberculosis* to different drugs is growing. Resistant TB is dangerous in a number of ways. The natural course and progression of the disease is quicker and complications are more likely. Drug-resistant TB is more complex and expensive to treat compared to non-resistant ones.

In 2011 there were around 400,000 cases of resistant TB worldwide and up to 10% of multi-drug resistant (MDR) cases were extremely drug resistant (XDR). Also only 19% of persons with MDR-TB have been enrolled in treatment programmes. The second edition of the book *DR-TB drugs under the microscope* examines sources and prices for drug resistant TB (DR-TB) medicines. The book has been published by the Medicins sans Frontieres (MSF) Access Campaign and the International Union against Tuberculosis and Lung Disease (IUTLD). The book provides a brief background on the DR-TB situation and drugs used in this condition. The book is divided into three main sections, Background, Drug Profiles and Annexes. The drugs covered in this book are grouped into

injectables (group 2), fluoroquinolones (group 3), oral bacteriostatic second line agents (group 4) and agents with unclear efficacy (group 5).

Drugs used in DR-TB are much more expensive than those used in non-resistant cases. The book mentions that first-line TB treatment is affordable and costs only US\$22 for a six-month course while the course of a standard regimen for MDR-TB ranges between US\$4000 and 6000. Four medicines capreomycin, moxifloxacin, PAS and cycloserine weigh heavily in the cost of TB treatment. The book highlights the fact that most drugs used in resistant TB are old and are off patent. Hence patents are not the reason for the high prices. A probable reason why prices are high according to the book could be the small and fragmented market and low production volumes and capacities for these medicines. The case study of a lady from India suffering from both HIV/AIDS and TB makes for poignant reading. Taking different medicines at various time periods of the day is difficult and she states 'Medicines have become my food'. DR-TB treatment requires patients to take up to six different medicines which may work out to 20 pills per day for up to two years.

The book provides brief profiles of the medicines, amikacin, kanamycin, capreomycin in group 2, and gatifloxacin, moxifloxacin, levofloxacin and ofloxacin (group 3). Among the group 4 medicines included are ethionamide, prothionamide, cycloserine, terizidone and PAS. The group 5 medicines discussed are clofazimine, linezolid, amoxicillin + clavulanate, clarithromycin, imipenem and thioacetazone. For each medicine a brief overview is provided followed by a table showing price in US\$ and information about drug quality. The brief description is followed by a box highlighting access issues. The book ends with different annexes. Annex 1 show the summary table of prices provided by pharmaceutical companies, annex 2 shows conditions of offer as provided by companies. Company contact information and references are provided. The last section is a glossary of terms and abbreviations.

The book will be useful for programme managers and procurement experts connected with TB programmes worldwide. The book will also be of use to TB and chest physicians who will understand the vital role played by cost in determining access to treatment. Medical students will find the book interesting and useful reading. Persons from a non-technical background interested in TB will also find most sections of the book readable.



**About the book:**

MSF Access Campaign, International Union against Tuberculosis and Lung Diseases. DR-TB drugs under the microscope Sources and prices for drug-resistant tuberculosis medicines. November 2012.

The publication can be downloaded for free from <http://msfaccess.org/content/dr-tb-drugs-under-microscope-2nd-edition>